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Particulate Emission Measurements from Controlled Construction Activities

Prepared for

Office of Air Quality Planning and Standards

Prepared by

**National Risk Management
Research Laboratory
Research Triangle Park, NC 27711**

FOREWORD

The U. S. Environmental Protection Agency is charged by Congress with protecting the Nation's land, air, and water resources. Under a mandate of national environmental laws, the Agency strives to formulate and implement actions leading to a compatible balance between human activities and the ability of natural systems to support and nurture life. To meet this mandate, EPA's research program is providing data and technical support for solving environmental problems today and building a science knowledge base necessary to manage our ecological resources wisely, understand how pollutants affect our health, and prevent or reduce environmental risks in the future.

The National Risk Management Research Laboratory is the Agency's center for investigation of technological and management approaches for reducing risks from threats to human health and the environment. The focus of the Laboratory's research program is on methods for the prevention and control of pollution to air, land, water, and subsurface resources, protection of water quality in public water systems; remediation of contaminated sites and-groundwater; and prevention and control of indoor air pollution. The goal of this research effort is to catalyze development and implementation of innovative, cost-effective environmental technologies; develop scientific and engineering information needed by EPA to support regulatory and policy decisions; and provide technical support and information transfer to ensure effective implementation of environmental regulations and strategies.

This publication has been produced as part of the Laboratory's strategic long-term research plan. It is published and made available by EPA's Office of Research and Development to assist the user community and to link researchers with their clients.

E. Timothy Oppelt, Director
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EPA REVIEW NOTICE

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Abstract

This report summarizes the results of field testing of the effectiveness of control measures for sources of fugitive particulate emissions found at construction sites. Tests of the effectiveness of watering of temporary unpaved travel surfaces on PM-10 emissions were performed in Beloit, Kansas during September 1999. The tested operation was scraper transit. Tests of the effectiveness of paved and graveled access aprons on mud/dirt trackout from unpaved truck exit routes were performed in Grandview, Missouri during November 1999. In the latter tests, moisture content and soil type were varied to determine whether watering of exit routes, while reducing on-site emissions, might have an offsetting effect of increasing emissions attributable to mud/dirt trackout controls in place.

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Acronyms and Abbreviations

ACE	Average control efficiency
acfm	Actual cubic feet per minute
DFS	Deramus Field Station (located in Grandview, Missouri)
DQO	Data quality objective
EPA	Environmental Protection Agency
ICE	Instantaneous control efficiency
IFR	Isokinetic flow ratio
MRI	Midwest Research Institute
NCKTC	North Central Kansas Technical College (located in Beloit, Kansas)
PM	Particulate matter
PM-X	Particulate matter less than X μm in aerodynamic diameter
QA	Quality assurance
RH	Relative humidity
sL	Silt loading
vmt	Vehicle miles traveled

Conversion Factors

Certain nonmetric units are used in this report for the reader's convenience. Readers who are more familiar with the metric system may use the following to convert to that system.

Nonmetric	Multiplied by	Yields metric
ft	0.3048	m
cfm	1.70	m^3/hr
yd^3	0.7646	m^3
ton	0.907	metric ton
lb	0.4536	kg